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February 25, 2004

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FEE RECORD SHEET

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of memory banks are pre-loaded with signal processing function code data associated with different digital signal processing functions required at various stages of a high speed digital communication system. The array-type processor is configured to switchably select, in real time or in near real time, the memory bank storing the signal processing function required in response to a change of system state. In this manner, the signal processing function code data is instantaneously available for execution by the array type processor. In this embodiment, the need to download the signal processing function code data from an external memory is obviated.

In accordance with another aspect of the invention, in a digital signal processing device, a method for reconfiguring the device in real-time or in near real-time to perform different signal processing functions as needed, comprises the acts of: (i) receiving input digital information at said network node; (ii) detecting a change of state in said network node; (iii) identifying at least one signal processing function to be performed responsive to said detected change of state in said network node; and (iv) dynamically reconfiguring, in real time or in near real-time, the signal processing device to perform said at least one signal processing function, responsive to said detected change of state.

Advantageously, the signal processing device of the present invention provides equivalent functionality as that provided by a plurality of dedicated hardware and/or software signal processing devices of the prior art using fewer resources. Moreover, it is to be appreciated that the ability to dynamically reprogram the signal processing device of the invention to perform different signal processing functions leads to a reduced silicon surface area with respect to prior art circuits. Design productivity is improved as a result.

The foregoing features of the present invention will become more readily apparent and may be understood by referring to the following detailed description of an illustrative embodiment of the present invention, taken in conjunction with the accompanying drawings, where

FIG. 1a is a prior art system diagram illustrating a cellular system within which the present invention may be deployed;

FIG. 2 is a block diagram generally illustrating the structure of a wireless network

dynamically reconfiguring, in real time or in near real-time, the signal processing device (158c) to execute said at least one signal processing function, responsive to said detected change of system state.

10. The method of Claim 9, wherein the act of detecting a change of state in said network node is made in accordance with one or more criteria including: (i) channel and system data (ii) protocols defined by a prevailing network standard under which the network node is operating, (iii) said received input digital information, and (iv) output data associated with the signal processing device.

11. The method of Claim 10, wherein the act of re-configuring the signal processing device further comprises the acts of:

retrieving, from an external memory (130), predetermined signal processing function code data responsive to said detected change of system state; and

storing said retrieved signal processing function code data in an array-type processor (120) of said signal processing device (158c).

12. The method of Claim 11, wherein said array-type processor is comprised of an array (120) of data processors (122), each data processor (122) in said array (120) including a dedicated memory (124) configured to store signal processing function code data.

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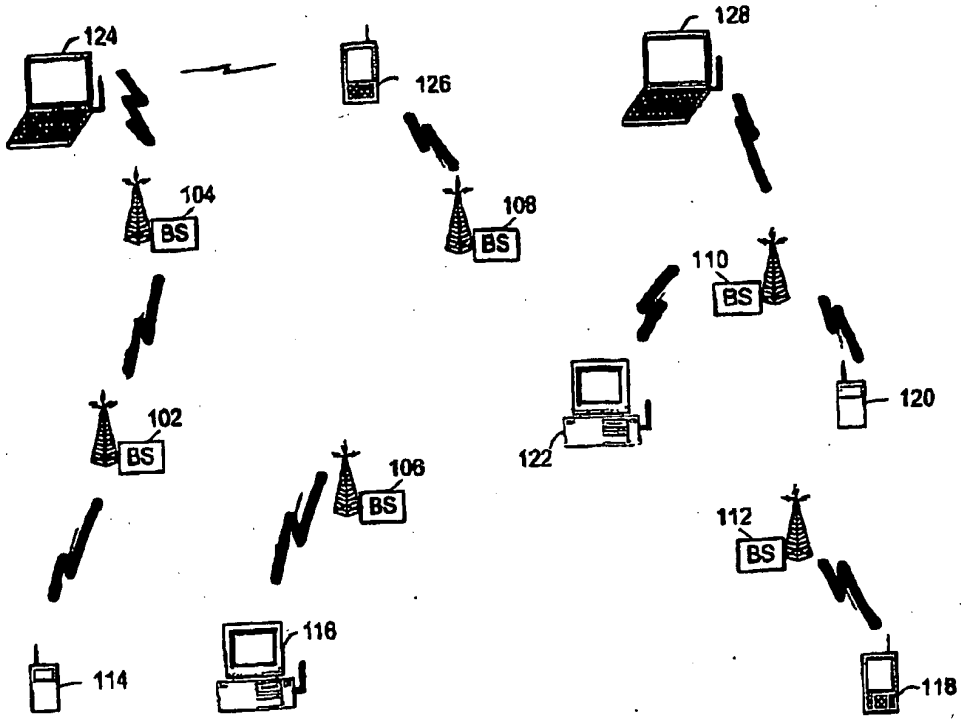

FIG. 1A (PRIOR ART)

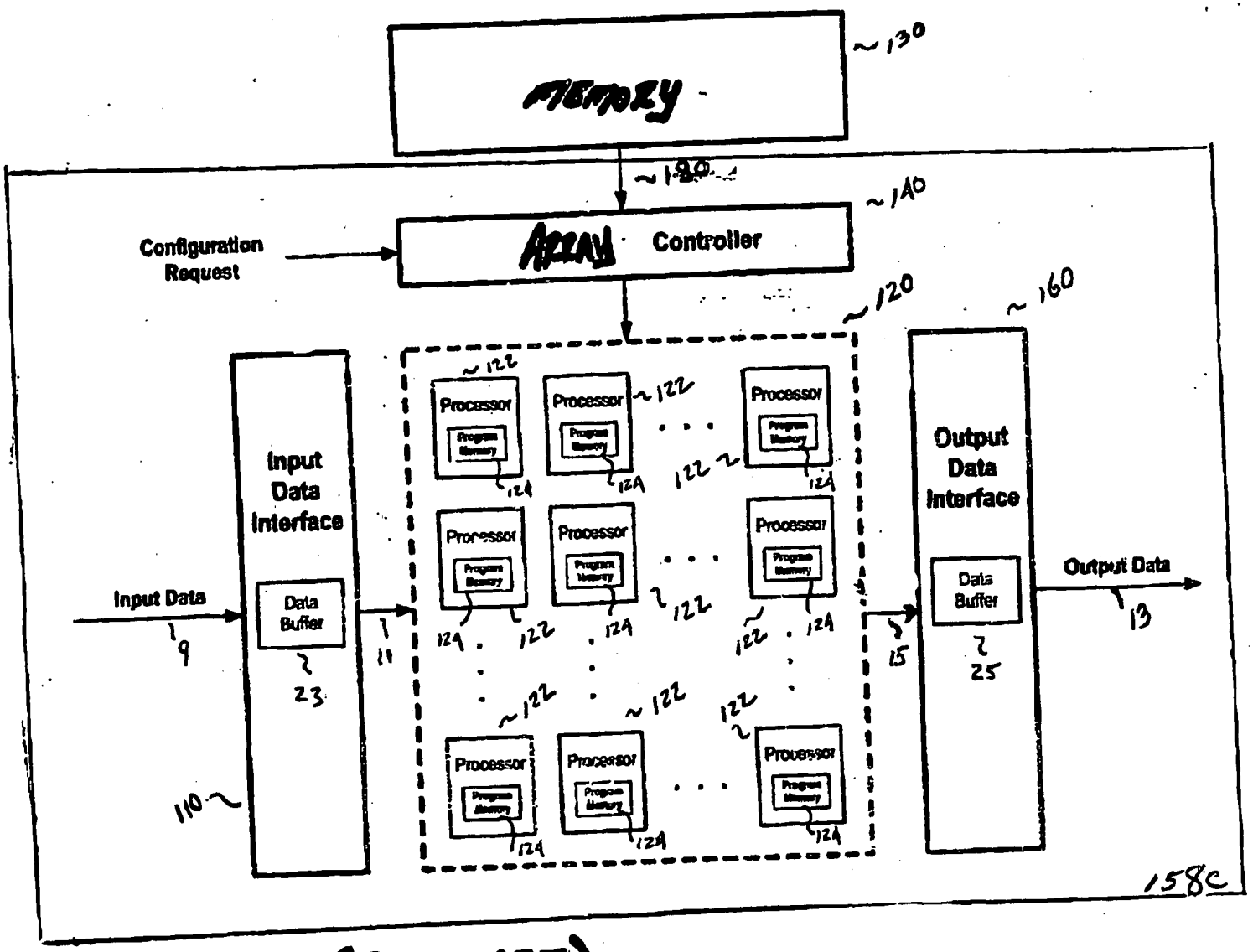

Figure 3 (PRIOR ART)

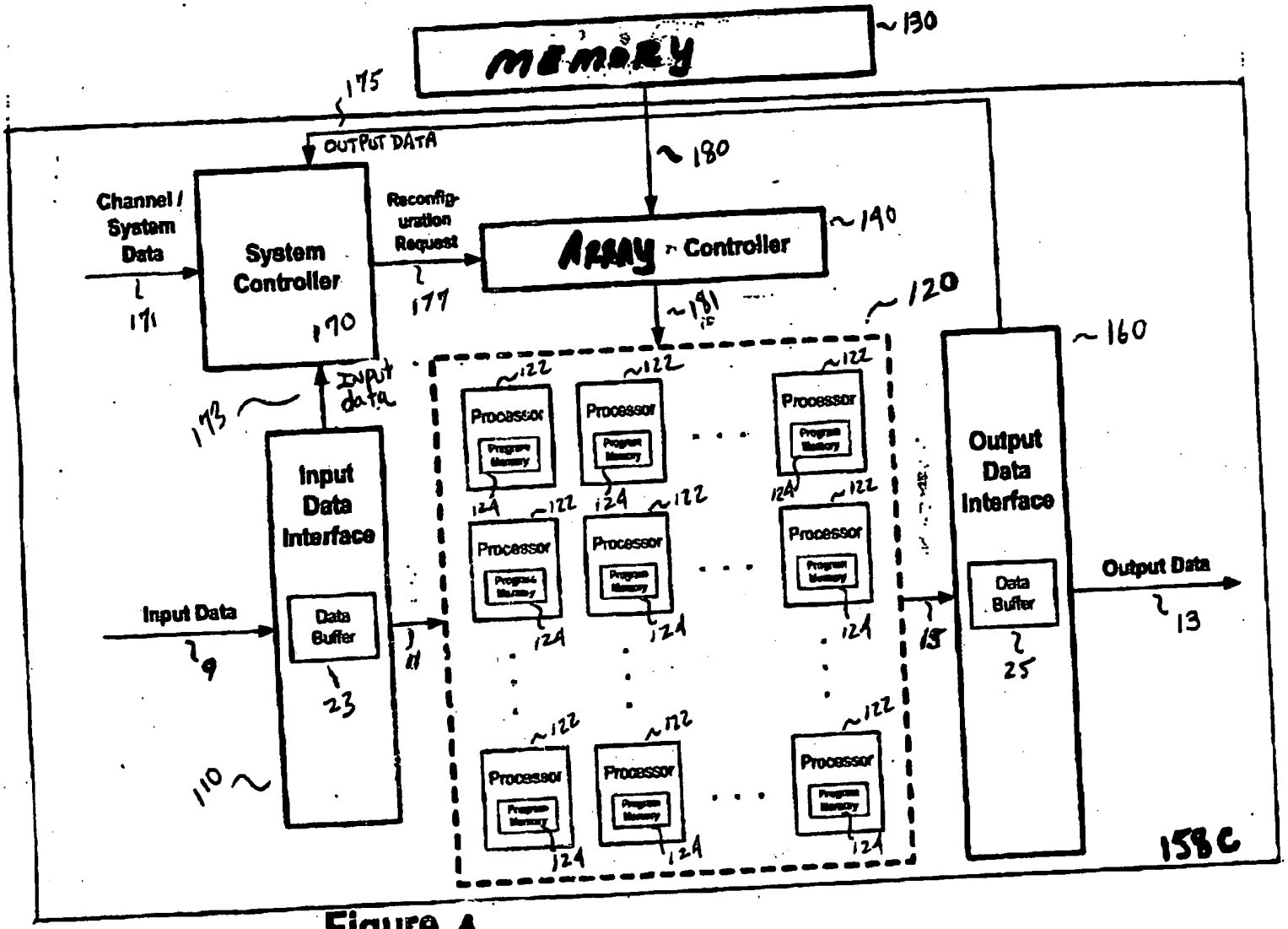

Figure 4

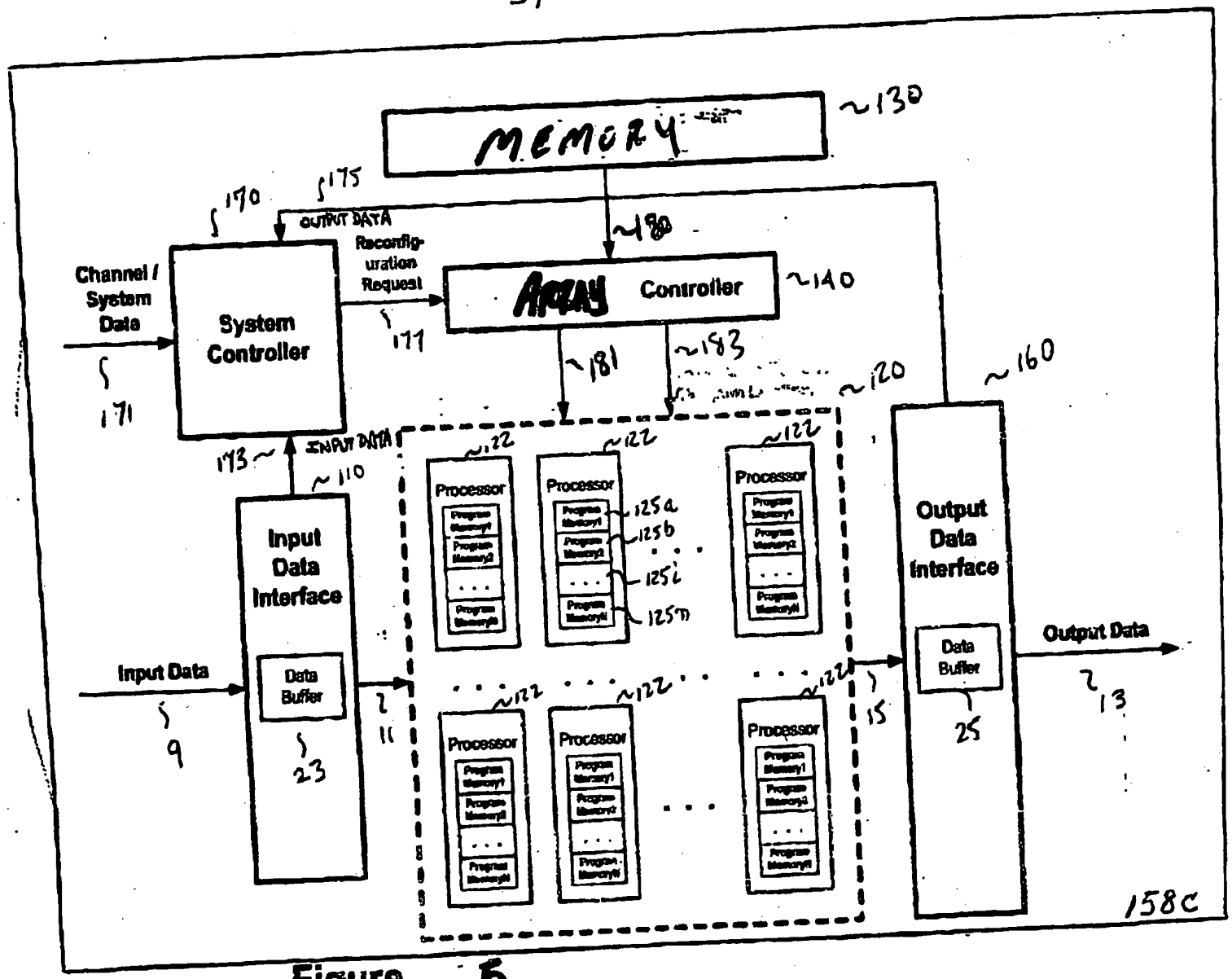

Figure 5